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ABSTRACT

In "Frames of Mind," Howard Gardner replaces the standard view of intelligence with the idea that human beings have several distinct intelligences. Using an elaborate set of criteria, including evidence from studies of brain damage, prodigies, developmental patterns, cross-cultural comparisons, and various kinds of tests, Gardner identifies seven intelligences. Even though it was first published in 1983, Gardner's theory has not made an impact on the teaching of writing. Since writing is a blend of several distinct human capacities, it is worth considering how it can engage Gardner's seven intelligences, though those seven intelligences are by no means (Gardner admits as much himself) definitive; they are only one means of understanding the multiple facets of the human mind. First, the linguistic intelligence offers keen sensitivity to language; it develops the poetic instinct and a strong narrative sense. Second, the logical-mathematical intelligence helps with logical organization and development; it is the problem solving conponent of thought. Third, the interpersonal intelligence grabs the writer and keeps his or her attention focused, attentive to audience needs. Fourth, the intrapersonal intelligence conveys author voice and presence. Fifth, the spatial intelligence offers keen observation and good description. Sixth, the musical intelligence helps the writer with the rhythm of his or her prose and the harmony of the different parts of a piece. Seventh, the kinesthetic intelligence encourages sensitivity to the physical and sensitivity to movement, body language and "gut" feelings. (Contains two tables and 23 references.) (TB)

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WRITING AND THE SEVEN INTELLIGENCES

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In Frames of Mind Howard Gardner replaces the standard view of intelligence with the idea that human beings have several distinct intelligences. Using an elaborate set of criteria--including evidence from studies of brain damage, prodigies, developmental patterns, cross-cultural comparisons, and various kinds of tests--Gardner identifies seven intelligences, listed in Table 1.

TABLE 1
THE SEVEN INTELLIGENCES
AS CHARACTERIZED BY HOWARD GARDNER

1. Linguistic -- sensitivity to language and the relations among words.
2. Logical-Mathematical -- abstract thought, precision, counting, organization, logical structure.
3-4. The two Personal Intelligences -- detailed, knowledgeable, responsive awareness of others; and of oneself.
5. Spatial -- observation, mental images, metaphor, gestalt.
6. Musical -- sensitivity to pitch, rhythm, timbre, the emotional power and complex organization of music.
7. Bodily-Kinesthetic -- control of one's body and of objects, timing, trained responses that function like reflexes.

Gardner reaches several conclusions about these "intelligences" (which he is willing to call intellectual competencies, thought processes, cognitive capacities, cognitive skills, forms of knowledge, or

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even useful fictions [284]):

(1) Human beings have evolved to have several distinct intelligences and not one general intelligence;

(2) Each intelligence is relatively independent of the others;

(3) Any significant achievement involves a blend of intelligences;

(4) These intelligences are valued by cultures around the world, though not always to the same degree.

In Gardner's view, every human achievement is permeated by intelligence of a kind far more supple and complex than commonly believed. These multiple intelligences "are present in virtually every realm of human activity" and not just in the verbal and analytical activities commonly called "intelligent" (285). This conclusion leads Gardner to criticize our educational system for its bias toward the linguistic and logical-mathematical intelligences--the two components of "IQ" as it is commonly understood.

Others with similar objections have proposed that the verbal and analytical intelligences are "left brain" functions which need to be balanced through a development of "right brain" methods, such as spatial and wholistic thought. Gardner gives us a long look at the next level of complexity beyond the simplicity of the left-brain/right-brain concept. In fact, he derives many of his conclusions from reexamining the same studies of brain damage that have been used to derive the "two-brain" theory. Looked at from his perspective, there are, in effect, seven "brains" instead of two--except Gardner divides the mind into functional, not anatomical, units. From the perspective of Frames of Mind, the two-brain theory lumps together some faculties that are not connected; two intelligences are not necessarily related just because they happen to share the right hemisphere. Such lumping is understandable; "in ordinary life," Gardner writes, "...these intelligences typically work in harmony, and so their autonomy may be invisible." And the theory of the left-right brain--whatever its shortcomings--has led to some intriguing work on the nature of writing and creativity, such as Rico's Writing the Natural Way and Edwards' Drawing on the Right Side of the Brain.

Even though it was first published in 1983, Gardner's theory has not made an impact on the teaching of writing--though it has influenced some innovative research like John-Steiner's study of creativity. This article introduces Gardner's 7-part theory of mind with the hope that it will stimulate new ways of thinking about writing and the teaching of

writing. I am most familiar with college-level writing of the kind that requires considerable research and organization, such as magazine non-fiction. When this article refers to "writing" in general, that is usually the kind meant--though the theory should apply fruitfully to other kinds of writing as well.

Writing can be seen as a blend of several distinct human capacities--and Gardner offers useful descriptions of what some of those may be. Clearly, good writing cannot be guaranteed by increasing the quantity of anything--including the number of "intelligences" at work. Following each section below, however, I have included a few suggestions for engaging each of the seven intelligences in the writing classroom, in same spirit a teacher might ask students to isolate other elements of writing, such as description, dialogue, or revision.

The theory of multiple intelligences does not deal with such concepts as motivation, attention, persistence, learning strategies, learning styles, adaptability, practical intelligence, inspiration, and wisdom, though Gardner discusses how the theory might relate to some of these. Because it is concerned primarily with cognitive operations, Gardner's theory is strong on intellectual operations and weaker in accounting for emotional, creative, and spiritual life. And like most other Western theories, it does not consider altered states of consciousness. There are loose ends; yet, confronted by the magnitude and originality of Gardner's synthesis (as well as his remarkable humility about it), one is not bothered by loose ends. Gardner's thought is richly and responsibly speculative. He marshals page after page of intriguing evidence, proposes bold ways to synthesize it, and views the entire enterprise with passionate detachment. He even insists that "there is not, and there can never be, a single irrefutable and universally accepted list of human intelligences" (60). His approach enriches our view of mind without overwhelming us with unrelatable bits of data. This theory might not be the last word on the subject, but some theory of such magnitude is needed to account for the evidence he discusses.

At many points in Frames of Mind where writing and writers would provide apt illustrations of Gardner's theories, he does not mention them; he had other purposes in mind. In using the theory of the 7 intelligences as a lens onto writing, I have had to fill in with a wide range of speculation. Four of Gardner's intelligences seem clearly

related to writing, and I discuss them first (not in the order he presents them). They are the linguistic, the logical-mathematical, and the two personal intelligences.

(1) Linguistic

A well-developed linguistic intelligence shows itself in attention to words, overtones of words, relations among them, syntax, and the beauty and substance of style. It is the most obvious element in what we mean by "good writing." Poets show how experts use this intelligence (Gardner discusses Eliot, Spender, and others) but it is also present in word play, puns, and even crossword puzzles.

Language, the chief product of linguistic intelligence, is surprisingly flexible. The deaf can learn language, and people can learn to read language through totally different symbol-processing systems --through a sound-oriented system of syllables (like our alphabet) or through a visually-oriented system of ideograms (like Chinese symbols). Studies indicate that syllables and ideograms are processed in entirely different areas of the brain, yet the linguistic intelligence can successfully make use of either method of encoding. It is characteristic of an intelligence, in Gardner's view, to appropriate whatever faculties or senses it needs, without being entirely dependent upon any of them. Gardner's linguistic intelligence includes qualities of both left and right hemispheric processing of language--both language in the linear sense and language in the enfolded, holistic sense. The linguistic intelligence appears to be a combination of several differently evolved systems--expressive gesture, intonation, the cognitive abilities of naming and classifying, and syntactical parsing.

Gardner cites a range of evidence for the physiological reality of linguistic intelligence. Damage to certain specific areas of the brain, for example, disturbs speech and the ability to write, while leaving intact the abilities to be musicians, visual artists, or engineers. Damage in other sites can radically alter a writer's style. Some of the alterations are surprisingly specific. Injury in one spot, Gardner relates, can turn a writer's style into a caricature of Hemingway; an injury in a different specific part of the brain can turn a writer's style into a caricature of Faulkner; injury in another location results in "a Damon Runyan character who can't remember the names of things" (90). Injury to the oral-auditory area, interestingly, impairs

reading--suggesting that reading and writing "piggyback" upon the brain's speech processing" (87).

Teaching writing through the linguistic intelligence. Teachers of writing will need no suggestions on how to develop the linguistic intelligence, with its emphasis on the sensitivity to shades of meaning, the sounds of words, mastery of syntax, and fascination with language. Since this intelligence seems to originate in the auditory-oral regions of the brain, performing poetry aloud seems a natural avenue to it, or at least listening to a magnificent recording, such as Cyril Cusak reading Yeats. The Dictionary Game provides a warmup for this faculty (find an unfamiliar word; challenge everyone to write imaginary definitions for it; read them along with the real one). Sniglets make an light followup. (One of mine: "Logicide: An argument in which the method of presentation disproves the point it is making.") An hour spent with a dictionary of synonyms (such as Funk & Wagnalls') attunes writers to the fine differences between such similar words as inadequate, insufficient, meager, scanty, scarce, skimpy, and sparse.

Gardner's theory provides a powerful opportunity for students to study people who display each of the intelligences. They can be found in all walks of life and are not always the kind who do well on IQ tests. I send some students back to their roots--which are often rural--to capture the narratives and inventive language of the storytellers in their hometowns. An easy way to get close to linguistic genius is to read and talk to a preschool child over several months.

Most of Gardner's comments on writing occur in his chapter on linguistic intelligence. Except where he is credited, the following applications of the theory of the seven intelligences to writing are my own.

(2) Logical-Mathematical

Thanks to Piaget, the logical-mathematical intelligence is the most securely documented of the intelligences. This intelligence derives from the handling of objects, grows into the ability to think concretely about those objects, then develops into the ability to think formally of relations without objects. One of the simplest applications of the logical-mathematical intelligence is in the quantification of observations--counting: a pursuit all writers carry out when they work to get their figures right. Enumeration is an example of the logical-mathematical intelligence's concern with precision in general.

At its peak, this precision produces the intricate proofs of higher mathematics; on the everyday level, any author who communicates facts accurately is engaging this same precision--and presumably this same intelligence.

Precision in language is different from the precision of thought demanded by the logical-mathematical intelligence, but the two support one another. Mathematicians, Gardner points out, must not only be able to reason precisely, they must also be able to write down their proofs with precision. The idea of the logical-mathematical intelligence directs one's attention to the precision of language and precision of thought in a piece of writing--whether the sustained structure of a long work, the organization of paragraphs, sentences, or transitions.

The logical-mathematical intelligence seems particularly involved in problem-solving and in grasping, drawing out, and showing the implications of an event. Gardner portrays this intelligence at work when the Bushmen derive elaborate conclusions from a few animal tracks, and when a mathematician works through the implications of a theorem. Unravelling the logic of a mystery story, piecing together the parts of a complex topic, prosecuting the case in an expose, solving a difficult and important problem--these are writing activities Gardner might categorize as logical-mathematical operations. The logic of imagined worlds appears to be developed by this intelligence as well; Alice in Wonderland was written by a mathematician.

The most successful application of the logical-mathematical intelligence, Gardner suggests, is scientific method, "the practice of making careful measurements, devising statements about the way in which the universe works, and then subjecting these statements to systematic confirmation" (146). These three steps offer an interesting perspective on the stages in certain kinds of writing. You "make careful measurements" by collecting information. You "devise statements" about how these facts go together in a thesis, outline, or method of approach. You "confirm your hypothesis" through additional research and revision, and through writing the results in a convincing way. If you can't "confirm your hypothesis," you shift to a different approach.

To sum up the scientific approach, Gardner quotes a description of Isaac Newton which sounds like a writer in search of a way to organize a topic:

"At the height of his powers there was in him a compelling desire to find order and design in what appeared to be chaos, to distill from a vast inchoate mass of materials a few basic principles that would embrace the whole and define the relationships of its component parts...In whatever direction he turned, he was searching for a unifying structure." (151)

One of the chief tasks of any writer is to find a way to focus the subject, to condense it around a central theme, approach, or organizing metaphor. Seen in terms of the logical-mathematical intelligence, writing is a search for "a unifying structure" to organize and explain a subject.

Gardner cautions against the Western tendency to assume that the logical-mathematical intelligence is the intelligence that shapes or reflects all others. That is distinctly not the case. Music, dance, and novels are driven from other sources (169).

In writing, we perhaps think, plan, organize, and perform large-scale revisions in structure through use of the logical-mathematical intelligence.

Teaching writing through the logical-mathematical intelligence. Exercises that challenge this intelligence could focus on precision, fact-checking, organization, focus, revision for structure, outlining, and writing in analytical modes, such as comparison or generalization from specific examples.

If your students have access to someone doing work on the forefront of physics, biology, or another scientific field, interviewing that person could be a valuable experience. Few things are as stimulating, or as humbling, as talking with a fine scientist doing research on the forefront of knowledge, a few steps beyond all certainty. Closer to home, students might look for unusual examples of logical-mathematical intelligence--perhaps at the local chess club, among players of the lottery, in quiet professionals like CPA's, actuaries, and even in mechanics (whose problem-solving methods are celebrated in Zen and the Art of Motorcycle Maintenance). Students could study and write about the use of logical-mathematical thinking on the news and in science reporting. Once you begin listening, you find signs of logical-mathematical intelligence in surprising places; I recently had a wonderful conversation after an unassuming tradesman who came to install a water heater casually mentioned "hysteresis losses," and we talked

about what he read to feed the natural curiosity of his scientific intellect.

(3-4) The Two Personal Intelligences

The two personal intelligences are inextricably interconnected, for it is only through a sensitivity to other people (the interpersonal intelligence) that one can come to know oneself; and it is only through sensitivity to one's self (the intrapersonal intelligence) that one can come to relate deeply to other people. The personal intelligences are inextricably bound up with the symbol systems supplied by one's culture--"including rituals, religious codes, mythic and totemic systems" (and surely the arts as well)--which provide a way to make sense of the experience of self and others. Indeed, "without a community to provide the relevant categories, individuals... would never discover that they are 'persons.'" It is at the interface of society and the individual, of the interpersonal and the intrapersonal, that one's sense of self is formed (251). Or, in the view Gardner prefers, one's "set of selves" is formed.

The personal intelligences are often found in strongly developed form among political and religious leaders, "skilled" parents, teachers, therapists, wise elders, and (Gardner adds) shamans. "These forms of knowledge are of tremendous importance in many, if not all, societies in the world," yet they have "tended to be ignored or minimized by nearly all students of cognition" (241).

In his list of those with strong interpersonal intelligence, Gardner did not mention writers--but they should rank highly. In order to write about another person, an author must have in abundance the most fundamental interpersonal skill: the ability "to notice and make distinctions among other individuals" (239). Good writers can project themselves deeply into another person's situation -- another mark of the interpersonal intelligence. More subtly, any good interviewer must have another trait Gardner describes here: sensitivity to others' hidden intentions and desires (239).

As recent articles have emphasized, writing is a social act. Even a beginning author knows to write differently about pollution for Audubon than for Ranger Rick. Gardner's concept of the interpersonal intelligence invites attention to the way people are described in and addressed by a piece of writing.

Interpersonal intelligence has its complement in intrapersonal intelligence--the essence of which is "access to one's own feeling life" (239), the capacity to discriminate among feelings, to find symbols for them, and to draw upon them to understand and guide one's life. Gardner finds this ability highly developed in therapists and patients, in wise elders, and in a novelist like Proust. Letters, diaries, poems, personal essays, autobiography, and autobiographical fiction have taught us much of what we know of other selves. Gardner's approach invites consideration of the way one uses cultural codes and invented symbols to make sense of the full range of inner experience, such as through keeping a journal. Approaches inspired by Vygotsky and Freire (e.g., Elsasser & John-Steiner) have emphasized the rich interrelation between interpersonal and intrapersonal in writing. Gardner similarly emphasizes the interplay of self and society, or rather of society with each individual's "wide variety of 'selves'" (242).

Teaching writing through the two personal intelligences. Some common writing activities engage the personal intelligences--including writing from personal experience, writing about another person, writing to a specific audience, and presenting an issue in terms of its impact upon a single person. Following the lead of Proust or Montaigne, students could use writing to explore their developing selves; journals, notebooks, and diaries provide powerful vehicles for recording introspections, for reflecting on experience, and for coming to understand one's core concerns, skills, feelings, and values. (Journals are a good vehicle for recording and reflecting on the kind of experiments suggested in this paper.) Following Keats or Shakespeare, students could practice projecting themselves invisibly into the skins of others, seeing through others' eyes, speaking through others' voices. Such an exercise could lead naturally to the point where student writers carefully distinguish their own experiences from those the culture leads them to expect. They are ripe then for one of the great themes of literature and life: the development of the sense of self through the confrontation of an individual's dreams and a culture's certainties--a theme that lights up every page of Don Quixote.

School and community leaders often possess interpersonal skills well worth observing. Send students to observe labor-management negotiations, a political rally, or to interview a notable therapist or teacher. Also look for nearly invisible examples of this type of intelligence, such as

women who have a genius for being good mothers. Here one can ask if love is an intelligence and speak of the gift for relating. The interpersonal gifts of some people arise only during crises--such as the tiresome little woman who knows better than anyone how to comfort the bereaved.

Intrapersonal intelligence may be more difficult to locate, but looking for wise people is a fine way to spend a semester. What makes a person wise? What prevents it? If you want to grow to be a wise person, what might help you do that? More simply, students might find and write about individuals who possess unusual self-knowledge or a highly developed spiritual sense. Religious leaders might be willing speak on this point. It is always instructive to interview and write about passionate adherents of differing beliefs--such as Christian Scientists and Christian fundamentalists, Baptists and Catholics, or Hindus and Moslems.

Personal and interpersonal form one another most vitally in family life--a deep source to write from. Students interested in genealogy could be encouraged to write a genealogy of personal traits--not just birth charts, but genealogies of personality and learned habits. Another theme: What would we know about ourselves and other people if the mass media were our only source of knowledge? What would be missing?

(5) Spatial Intelligence

Writing is clearly related to the intelligences discussed so far--linguistic, logical-mathematical, interpersonal, and intrapersonal. The relation of writing to spatial, musical, and kinesthetic intelligence is likely to be controversial and may vary widely among writers. Based on my own experience as a writer, I will argue that these three intelligences also play a role in writing--perhaps a metaphoric role for many, but for others, these may be close to the center of the writing experience.

The spatial intelligence manifests in a variety of ways. Transforming mental images is a spatial skill that engineers and designers depend on. When a hiker pauses with map and compass, it is the spatial intelligence that conceptualizes the path. Through the spatial sense, a painter "feels" the tension, balance and composition of a painting. Spatial ability is also "the more abstract intelligence of a chess master, a battle commander, or a theoretical physicist" (194), as well as the familiar ability to recognize objects, faces, and details.

Some of the key features of spatial intelligence mirror key features in writing. The ability to see at all is an act of spatial intelligence, and intelligent perception lays the foundation for all writing that is based on observation or description. Writers create a wide variety of mental images in readers--an expression of the spatial intelligence sometimes discussed under the label of "visual thinking" (as used, for example, by Arnheim; Samuels; McKim). In a eye-opening piece of information (the kind of tidbit that makes this book fascinating), Gardner reports that spatial intelligence is not exclusively tied to the visual sense; it can develop even in a blind person (174). One of Gardner's recurring themes comes back to mind at this point: "In no case is an intelligence completely dependent upon a single sensory system, nor has any sensory system been immortalized as an intelligence" (68). "Spatial" is therefore more than "visual" and includes abstract, analytical abilities that go beyond seeing images. This knowledge suggests that the standard advice--"write for the eye"--may be usefully elaborated into something like: "write so the reader's spatial intelligence can construct the scene from clues you have provided." Studying this chapter, I often thought of that aphorism in which William Blake emphasized the role of imagination in seeing: "The mind sees through the eye."

It is in the spatial intelligence that Gardner locates one of the activities most central to writing: the "ability to discern similarities across diverse domains." He praises Lewis Thomas's expressive analogies between biological phenomena and human concerns. He connects this to the "images" underlying many scientific theories, such as "Darwin's vision of the tree of life, Freud's notion of the unconscious as submerged like an iceberg, and John Dalton's view of the atom as a tiny solar system." (176-7)

In writers, the product of this ability is metaphor-- not only one of the prime expressions of the creative process, but perhaps the single most important technique for communicating. Through metaphor and metaphoric thinking, we communicate new thoughts by linking the unknown with the known by means of the spatial intelligence. (Much later in the book, Gardner suggests that metaphor can be spread among many domains, not just the spatial [292-3]).

The spatial intelligence may play an important role in organizing writing. "Mind maps" and outlines are spatial methods of displaying the organizational structure of a thought. Through this kind of visual

thinking, one can perceive how thoughts are related to one another, how realms of thought stack, overlap, or stand side by side. The terms used in outlining are generally spatial terms: Headings are placed "under" or "above" one another. Thoughts are arranged in "higher" and "lower" levels. In a more vivid form of spacial organization, some writers describe seeing a scene like a 3-D movie, then writing about it.

Gardner's account of the spatial intelligence touches upon another ability that is crucial to good writing: the ability to convey a sense of the "whole" of a subject or of a piece of writing--a "gestalt" organization, different from the logical-mathematical kind of organization used, for example, in this article. The ability to impart a non-logical wholeness to the form of a piece, Gardner suggests, may be a function of the spatial intelligence.

Sex differences are more pronounced in tests of spatial skills than for any other intelligence. Males score more highly than females. Gardner speculates that genetic selection, dating to hunting-gathering days, may be the cause.

Teaching writing through the spatial intelligence. To exercise the spatial intelligence in a writing class, one might examine alternate endings to see which give a sense of wholeness. One might examine the language of architects, sculptors, and other visual thinkers, to see how it differs from common usage. Look at slides of scenery, art works, advertisements, cultural artifacts, and people. Work with perceptual puzzles of the kind Gregory details. Different meanings associated with the word "space" make an interesting discussion and lead to topics for writing. The spatial images imbedded in daily speech suggest the depth of our visual thinking: understand, inadvertent, advertisement, under the weather, beside himself, feeling low, a tall order, go fly a kite. (Lakoff's analysis of the spatial dimensions of thought and language is a powerful place for a writer to start.) Students could try using such expressions as the driving force for a piece of writing.

The appearance of writing on the page can be a central part of its expressiveness. Compare a dozen different typefaces and write characterizations of their "personalities." To see the effect of type, set a passage in a typeface whose expressive qualities clash with those of the text.

It should be interesting to find out whether stimulating spatial awareness can stimulate the use of description, metaphor, or a sense of

organic form.

Spatial intelligence is easy to find in any community--architects, contractors, and engineers have it. So do most carpenters and many other tradespeople. See if an artist can come talk to your class. Look for a local crafts person with unusual spatial ability--perhaps someone who carves interlocking wooden chains. Visit a work of architecture that creates a special space and, perhaps with the help of photographs of Greek temples and medieval cathedrals, discuss and write about the power of spaces.

(6) Musical Intelligence

In introducing musical intelligence, Gardner first stands back and identifies its basic core of objective features: rhythm, pitch, harmony, and timbre, but he soon moves closer to dwell on the mysterious emotional power of music. He then presents several kinds of evidence to support his theory that musical ability functions like an intelligence--what composers have called "logical musical thinking" and the "musical mind" (101-2). Musical abilities illustrate why Gardner rejects the simpler split-brain concept of mind. Although most musical abilities are located in the right hemisphere, trained musicians are likely to draw upon the left hemisphere "in solving a task that the novice tackles primarily through the use of right hemisphere mechanisms" (119).

The musical intelligence is more difficult to relate to writing than the others are, especially when you consider that tone of voice is not included in the province of the musical intelligence. But it is no accident that the rhythmic, tonal qualities of words have long been associated with music. Music probably originates in primordial dance, song, and gesture--places where speech and writing may also have deep roots. The earliest poems that we know about appear to have been sung or chanted--perhaps to the accompaniment of a musical instrument. Today, it would be easy assume that clear, straightforward prose was the original method of written expression, and that poetry is an emotional elaboration on prose. The opposite is almost certainly true. The de-poeticizing of prose has been the work of centuries.

Today's emphasis on clear, simple prose floats uneasily upon a sea of older and far deeper styles--the complex cross-currents of poetry, persuasion, and personal song. Some writers find the clean logic of the Strunk and White style overly restrictive. Expressive writing reaches

back into the roots of song, tone, dance, and rhythm to draw upon the powerful communicative abilities of what Gardner calls the musical intelligence. I sometimes invent aphorisms to stimulate (and provoke) students; one goes, "You can begin to write better only when you realize that speech is the least recognized of all the forms of music."

The musical intelligence is not limited to poetry and poetic prose. Many writers have celebrated the music of writing.

"When I sit down to write, I know that I hear in my head the rhythms of writers I have read and admired. Sometimes, I can even remember which writer's rhythm I am hearing. I think all the good writers hear the music of good writing they've read." (Kuralt 2)

A good piece of writing not only has rhythm (a musical quality), it moves with a larger rhythm of its parts. The parts of the piece fit together; it does not sound odd to describe good prose with musical terms like "counterpoint" and "harmony." Moreover, a complex piece of writing must hold in suspension many disparate elements--a juggling act difficult for the logical mind, but easy in music--and bring these together in a satisfying resolution. It is far from absurd to suggest that these functions in writing may be mediated by the same intelligence that creates and processes music. (In a recent mail-order catalogue, the company attributed a new manager's exceptional ability to coordinate many activities to the fact that he is an amateur musician who thinks of each department as a different section of a symphony orchestra.)

Anyone in search of musical writing will find many examples in Thoreau's Walden, Loren Eiseley's The Immense Journey, and Lewis Thomas's Lives of a Cell--to name a few. Infrequently, you can find prose written so much to the inner ear that it virtually becomes a form of music in itself, such as in the final chapter of James Agee's wonderful Let Us Now Praise Famous Men.

Teaching writing through the musical intelligence. Describing music might be a way to bring the musical intelligence into the writing classroom. I have asked students to compare three recordings of the slow movement of Beethoven's 7th Symphony. Walter makes the movement a soulful choral. Karajan presents it as the planets dancing at a costume ball. In Toscanini's version, the demonic, pulsating energies of the cosmos drive and throb through the piece with a relentlessness that

nearly, but not quite, overwhelms a counterbalancing sweetness.

Here is another workshop exercise that can produce dramatic results. Have students write on a given theme close to their experience (memories of early days in school, say). After five minutes, intersperse five minutes of making music, using noisemakers, singing, chanting, or moving to a Caribbean beat. Immediately resume writing for five minutes. Compare the before and after writings, to see what, if any, imprint the musical experience left on the prose.

Send students to observe and talk to several kinds of musicians--composers, jazz improvisers, rock performers, classical pianists, banjo pickers--whoever is available--and compare what they find out about how these people think musically and create music. Talk to non-performers who love music and consider it central to their lives. A few pieces--including a couple of Mozart piano concertos--always seem to be replaying somewhere in my own mind, energizing and shaping the deepest foundations of thought.

(7) The Bodily-Kinesthetic Intelligence

The core elements of the bodily-kinesthetic intelligence are control of one's bodily motions and capacity to handle objects skillfully (206). Gardner elaborates to say that this intelligence also includes a sense of timing, a clear sense of the goal of a physical action, along with the ability to train responses so they become like reflexes. Along with these, you often find a high degree of fine-motor control and a gift for using whole body motions.

These abilities may not seem very impressive, at first glance. Bodily intelligence is not widely appreciated in our culture. Calling it an "intelligence" is almost startling, though less so after Gardner has called upon Marcel Marceau, athletes, actors, inventors, and dancers to make his case for a bodily intelligence.

Gardner cites a dancer's conviction that we all have the capacity "to apprehend directly" the actions, feelings, or dynamic abilities of other people, without help from words or pictures (228). Dancers and actors draw on this ability; so do architects, who speak of "feeling in their bodies" the mass and proportion of a building. Surely this ability is at work when I waltz out of an early Charlie Chaplin movie, feeling as though my whole being has been taught to dance.

What light does it cast on writing if you assume--with Gardner--that

people function with a bodily intelligence of equal status to the linguistic and logical intelligences? Consider how many kinesthetic expressions apply to the experience of reading. We speak, for example, of being "touched," "taken," "gripped," "led," "held." We "grapple" with difficult subjects, and have "gut wrenching" experiences. Our stomachs turn. Our hearts leap. Our breathing quickens. We may tremble, sigh, and be "moved." These responses are rooted in kinesthetic experience. Jacobson presented evidence that all emotional responses are rooted in finely-tuned kinesthetic awareness. We know our emotions through the intelligence of the body; any writer who wants to affect the way readers feel must find a way to touch the kinesthetic intelligence with words.

Kinesthetic writing may be action oriented. It may also be tactile, motile, muscular. More subtly, the kinesthetic intelligence might be what makes a piece of writing feel down to earth, real, physical, sexual, funny, vital. If the kinesthetic intelligence is strong in a piece of writing, something beyond its thinking and verbal facility is likely to grab you at the gut level. It may affect you, move you, pace your responses. The writing may have a natural sense of movement. If you stopped to consider, you might say, "It breathes." Brown and Zoellner devote a few pages to analyzing the way Melville used a "dramatically kinesthetic rendering of mere process facts" to organize his description of the cutting-in of the whale (375). Their analysis illustrates a great kinesthetic intelligence at work in structuring a descriptive passage, as in: "This accomplished swordsman...makes a scientific dash at the mass, and with a few sidelong, desperate, lunging slicings, severs it completely in twain."

A writer who gropes for a way to say it that "feels right," may be seeking words that re-create the bodily component of an experience. This kind of writing is different from the translation of ideas or mental images into words; it is the creation of words which occasion a particular bodily experience, or which resonate with a complex and detailed bodily "map" of an experience. We may, as Einstein remarked in a famous passage, think not only with images but with elements of thought that are "of muscular type" (190).

Advertising researchers have measured certain physical changes caused in viewers of commercials: changes in pulse rate, blood pressure, and galvanic skin response. Surely writers create similar changes in

readers. Writers may create very specific changes--physical, kinesthetic experiences--in the bodies of their readers, taking them not so much through a vicarious experience as through a subliminal but nonetheless real bodily response to the events recounted. Recent books by practitioners of various schools of "bodywork" document the extraordinary degree to which a "mental" activity such as memory or emotion is linked with highly specific muscular patterns. Older ideas, based on a compartmentalization of "mind," "body," "reason," and "emotion," have thoroughly changed in current psychosomatic practice. Though no single new paradigm has gained wide acceptance, what used to be dismissed mechanically as "the body" is now widely discussed (e.g., in Bliss) as a knowing, conscious, and wise organism which has a multifaceted relationship to other human faculties.

When we look for more information about the kinesthetic intelligence and its relation to an activity as "mental" as writing, we are likely to find help in current research on mental imagery and its effect on disease, massage and other body therapies, meditations based on breathing, and explorations that take place during deep relaxation (such as Autogenic training). Diamond describes how, in a healing method called Applied Kinesiology, it is possible to demonstrate how merely thinking a lie distinctly weakens a muscle being tested. For centuries, poets have been playing music on our internal organs; but current researchers glimpse only the grossest changes. The role of the kinesthetic intelligence in writing is still a frontier largely unexplored.

Gardner's thoughts on the kinesthetic intelligence do not take this direction, but the responses and memory of the body itself--the kinesthetic mapping, processing, and assimilation of experience--may prove to be a crucial factor in writing and reading. Perhaps we will discover that appealing to the kinesthetic intelligence, to "touch by mother wit/ things hid in their marrow-bones" (as Yeats put it)--plays a much more important role in writing than we now have the vocabulary to imagine. (Who among us has not been healed by reading--or writing--the right thing at the right time?)

Teaching writing through the bodily-kinesthetic intelligence. The kinesthetic intelligence might be engaged in the writing classroom by closely describing an action, or by characterizing a person through gesture, rhythm, and ways of moving. A period of writing could be interrupted by a kinesthetic experience, followed by another period of

writing and a discussion of any differences in the writings. For kinesthetic experiences, you could do breathing exercises, lead the class in a simple part-by-part relaxation, or conduct some simple eyes-closed movement exercises of the kind described in Moishe Feldenkrais' books. Improvisations, such as Welfare Christmas, will also work: Using only mime, display an imaginary object to the class, then pass it to the next person who must transform it into a different object, again using only mime. Silent comedy offers a wealth of kinesthetic intelligence at work: Charlie Chaplin's shorts, such as The Immigrant, The Pawnshop, or Easy Street, are among the masterpieces now easily available on video.

Exciting work in progress by Karen Klein and Linda Hecker (first developed for dyslexic students) uses kinesthetic walking-through exercises to help writers organize their stories at the bodily level before outlining them in writing.

Students can learn much from interviewing and studying those with kinesthetic gifts. The obvious examples come from athletics, gymnastics, and dance. But there is also the intelligence of touch that operates in gifted masseurs, chiropractors, and osteopaths. There is almost certainly someone in your community who practices healing by laying on of hands. Students can find kinesthetic intelligence in puppet masters, magicians, actors, martial arts practitioners, any in anyone with natural bodily grace. We are all products of the wisdom of the body; it is something knowable through sexuality and nowhere clearer or more powerful than in natural childbirth. Within the limits of your situation, these might make powerful topics for students to explore in writing.

Conclusion

In Frames of Mind, Howard Gardner presents the theory that there is no general "intelligence" of the kind purported to be measured by IQ tests. Instead, the human mind is organized around several distinct functional capacities, which he calls "intelligences." Using an elaborate set of criteria, he identifies the seven intelligences listed in Table 1. Though these intelligences overlap with the two-brain theory that distinguishes the functions of left and right hemispheres, Gardner sets aside the two-brain model in order to investigate thinking at a deeper level of complexity. Each intelligence combines elements that may have evolved separately. Though certain functions are highly localized in the brain and can be eliminated by brain damage to that site, the

intelligences are surprisingly flexible and can make use of various senses, parts of the brain, and chance opportunities. (Even the blind can develop spatial intelligence.) The intelligences follow characteristic patterns of development in childhood, yet those patterns are diverse enough to prohibit one from prescribing a set pathway by which children should develop. While these intelligences appear in cultures all over the world, different cultures value them differently. Each of the seven intelligences is relatively independent of the others, but they do not often appear separate, because they usually work together and may be understood as separate only after observing many instances of their combined effort.

Gardner suggests how several different intelligences might work together in a concert violinist. In addition to the obvious musical ability, she will display kinesthetic skills in fingering and bow movement; interpersonal intelligence in communicating with an audience; intrapersonal intelligence in feeling the emotions of the music; logical-mathematical skills in analyzing musical structure, planning performances, and making a profit; and so on (xii).

Table 2 summarizes this paper by extrapolating the seven intelligences to suggest how they might manifest in a writer. The framework sketched in Table 2 also suggests a new way to consider a piece of writing or a student writer: Where are the writer's strengths and weaknesses in terms of this model? Research questions arise: Can the stimulation of one intelligence, such as kinesthetic awareness, produce predictable changes in writing style? Will the stimulation of one modality of one intelligence (such as the visual aspect of the spatial intelligence) stimulate other modalities of the same intelligence (the metaphoric aspect of the spatial intelligence)? Flower and Hayes' model of writing suggests how complex the interactions may be between mental functions. What are the interrelationships between the different intelligences during writing--say, between verbal and spatial thought?

TABLE 2
GARDNER'S SEVEN INTELLIGENCES
AS WINDOWS ONTO WRITING

1. Linguistic -- keen sensitivity to language; poetic; precision of language; strong narrative sense.

2. Logical -- logical organization and development; precision of thought; clear transitions; well-focused; excellent exposition; tells how big, how much, and how many; problem-solving approach

3. Interpersonal -- grabs you, keeps your attention through human interest; sensitivity to audience; characterization; human meaning, responses, and relationships; quotes, anecdote, and dialogue.

4. Intrapersonal -- author's voice and presence; sense of purpose; values; feelings; personal story; finds symbols for inner experience; directed from one self to another.

5. Spatial -- keen observation; good description; spatial development in narrative and description; metaphor; sense of wholeness from overall gestalt

6. Musical -- rhythm; harmony of parts; resolution of disparate elements; distinct music of style; the deep pre-verbal flow of thought.

7. Kinesthetic -- physicality, sensitivity to movement, body language; grounded; gut feelings; sexuality; humor; down to earth; close to nature; deep interrelatedness; natural pace and movement; vitality; organic, aerobic prose (it breathes).

Gardner's model is not a unified field theory of mind. It does not attempt to account for some important factors --such as motivation, attention, creativity, inspiration, practical intelligence, and persistence. But Frames of Mind is one of the central texts on the topic of human diversity. It is an intellectual adventure--wide-ranging, deeply thought, and dazzlingly speculative. While conveying a tightly-defined core of concepts, it radiates out into the forefront of many fields of knowledge. Self, others, symbol, brain, and culture blend with a remarkable harmony in this theory. It is a view that honors "innate intellectual proclivities," individual differences, the crucial role of tools and symbol systems, the social nature of knowledge, and the way cultures shape the minds that shape culture.

The lesson of Gardner's book (and of this article) is that people are smart in many different and often surprising ways, and that some of those ways are rarely recognized in our system of schooling. The framework presented by the theory of multiple intelligences can bring new ideas to the writing classroom, and it can add theoretical depth to some existing pedagogical practices. Conversely, a writing classroom can be used as a forum in which students discover multiple intelligences at work in themselves and in others. With a theory such as Gardner's, we might be more able to see beyond the limits of current theories of human ability to find other forms of intelligence permeating all human activities.

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